



Investigating the individual and organisational predictors of work-related driving crash involvement in Ethiopia



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ABSTRACT

The rate of road traffic injury and death in Ethiopia is at a critical level when compared to rates in high-income countries. Considering the enormity of this issue, research is to identify groups of high-risk road users and the factors contributing to their crash involvement. This study focuses on work-related drivers. This study explores driving behaviour as a mediator of the relationship between organisational and individual attribute factors and self-reported crashes in a sample of 213 work-related drivers in Addis Ababa, Ethiopia. The hypothesised framework identifies driving behaviour as the most proximal determinant of self-reported crashes, and safety values, role overload and self-efficacy as antecedents of driving behaviour. With the exception of the relationship between self-efficacy and driving behaviour, all the hypothesised relationships were supported. We make recommendations for intervention approaches that are theoretically focused and sensitive to the cultural context.

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1. Introduction

Road traffic injuries are estimated to be the eighth leading cause of death globally. In 2010, 1.24 million people were killed on the world's roads (World Health Organisation, 2013). The data indicates large disparity in rates between countries, with low-income countries having fatality rates nearly three times higher than high income countries (18.6 per 100,000 population compared to 6.3 per 100,000 population). The African region has the highest road traffic fatality rate, where the risk of dying as a result of a road traffic injury is 24.1 per 100,000 population compared to 10.3 per 100,000 population in the European Region (World Health Organisation, 2013).

Ethiopia is one among many low-income countries in Africa and, like other low-income countries it has a high rate of road traffic injury and death (Persson, 2008). In fact, The Coordination Office of Ethiopian National Road Safety identified a road traffic fatality rate of 114 deaths per 10,000 vehicles per year. In Addis Ababa, the capital of Ethiopia, road traffic injury and death is at a critical level. A report from The Addis Ababa Transport Authority Branch Office of the Federal Transport Authority (2010) indicated that from 2009 to 2010, 651 residents of the city lost their lives as a result of a road traffic crash. In this same period, 624 serious accidents (required hospitalisation), 669 minor accidents (no hospitalisation required) and 4674 property damage only crashes were recorded. These crashes resulted in a total of \$3359,068 (USD).

The first stage in addressing the enormity of road traffic injury and death in Ethiopia is to identify groups of high-risk road users and the factors contributing to their crash involvement. Anecdotal evidence suggests that the majority of road users in

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Ethiopia drive their vehicle for work-related purposes. There is also a suggestion that approximately 81% of road traffic crashes in Ethiopia are attributed to driver error (Road Transport Authority, 2005). These findings suggest that research is needed to understand the determinants of work-related crash involvement, so to inform targeted intervention approaches.

Although research on work-related driving safety is scarce in Ethiopia, lessons can be learnt from high-income countries. In Australia, studies have identified organisational factors such as a driver's perception of the value given to safety in the organisation (Newnam, Griffin, & Mason, 2008a, 2008b; Wills, Watson, & Biggs, 2009), driver's experience of excessive work demands (Newnam, Greenslade, Newton, & Watson, 2011; Wills et al., 2009), and individual factors including a drivers' belief in the ability to drive safely (i.e., self-efficacy; (Newnam et al., 2008a, 2008b; Wills, Watson, & Biggs, 2006), and their own driving practices (Newnam et al., 2011) as predictors of work-related driving safety outcomes. The aim of this study is to explore these factors as direct and indirect predictors of self-reported crashes in a population of work-related drivers in Addis Ababa, Ethiopia.

1.1. Work-related driving behaviour

Safe driving practice has been well established as a significant predictor of safety outcomes in the general driving population (e.g., Lawton, Parker, Manstead, & Stradling, 1997; Parker, Reason, Manstead, & Stradling, 1995; Reason, Manstead, Stradling, Baxter, & Campbell, 1990). The significant relationship between driving behaviour and crash involvement has also been identified in the work-related driving population (Newnam, Newton, & McGregor-Lowndes, 2009). Given that the large majority of traffic accidents in Ethiopia are attributed to driver error (Road Transport Authority, 2005), it is expected that the degree to which drivers engage in safe driving practices will be directly associated with their past crash involvement. As such, we predict:

H1. Drivers who report engaging in more frequent unsafe driving behaviour will more likely report a crash in the past 4 years.

1.2. Safety values

Safety values have been defined as the priority and importance associated with safety (Griffin & Neal, 2000). Much of the research concerning safety-related perceptions has focused on the workplace, particularly perceptions of the safety climate (e.g., Hofmann, Jacobs, & Landy, 1995; Neal & Griffin, 2006; Zohar, 2000). Past research has found support for the relationship between the value given to safety within an organisation and outcome measures such as, accident rates (Zohar, 1980), self-reported accident involvement (e.g., Mearns, Flin, Gordon, & Fleming, 1998), self-reported safety behaviours (e.g., Griffin & Neal, 2000; Hofmann & Stetzer, 1996), and frequency of compensation claims (O'Toole, 2002).

Measuring the construct of organisational safety values is somewhat problematic in relation to work-related drivers in Ethiopia. In this African Region, not all work-related driving behaviour is managed under the same organisational system of rewards and control that operate in most high-income countries (e.g., UK, Australia). Rather, enforcement of driving behaviour is regulated by the city government of Addis Ababa. Thus, many drivers self-manage their own behaviour rather than being managed by a supervisor within an organisational context. As such, measuring the value given to safety should be targeted at the appropriate source (i.e., own safety values or perception of the value given to safety by workgroup supervisors). In this paper, safety values represents an indirect predictor of self-reported crashes, through its effect on driving behaviour. As such, we predicted the following:

H2. Safety values will be negatively associated with unsafe driving behaviour.

1.3. Role overload

Role overload has been defined as the perception of excessive work demands (e.g., (Kahn, Wolfe, Quinn, & Snoek, 1964). Role overload has been shown to be significantly associated with unsafe workplace behaviours (Hofmann & Stetzer, 1996). Employees' perception of the degree to which job performance is affected by inadequate time, training, and resources has been found to influence safety performance (e.g., Hofmann & Stetzer, 1996; Hofmann et al., 1995). In the work-related driving context, role overload has been identified as a predictor of safety performance. For example, Adams-Guppy and Guppy (1995) found that time pressure was influential in a compromise between speed and safety. Other research has also identified the deleterious effects of role overload on attention while driving (Downs, Keigan, Maycock, & Grayson, 1999; Salminen & Lahdeniemi, 2002). This research suggests that the priority given to production pressures influences safe driver practices in the work-related driving context. In this paper, role overload represents an indirect predictor of self-reported crashes, through its effect on driving behaviour. Thus, we predict the following:

H3. Excessive work demands will be positively associated with unsafe driving behaviour.

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